MSA-T

Hardware Revision K

User Manual



Updated 2010-11-01

Additional documentation available at:

http://highlyliquid.com/support/

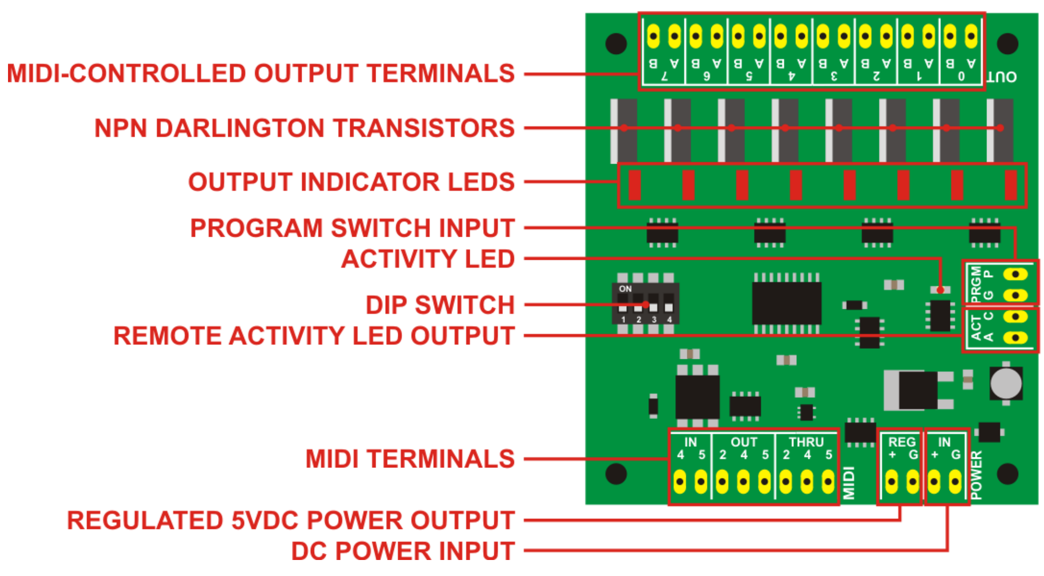
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1.0 Important Safety Information

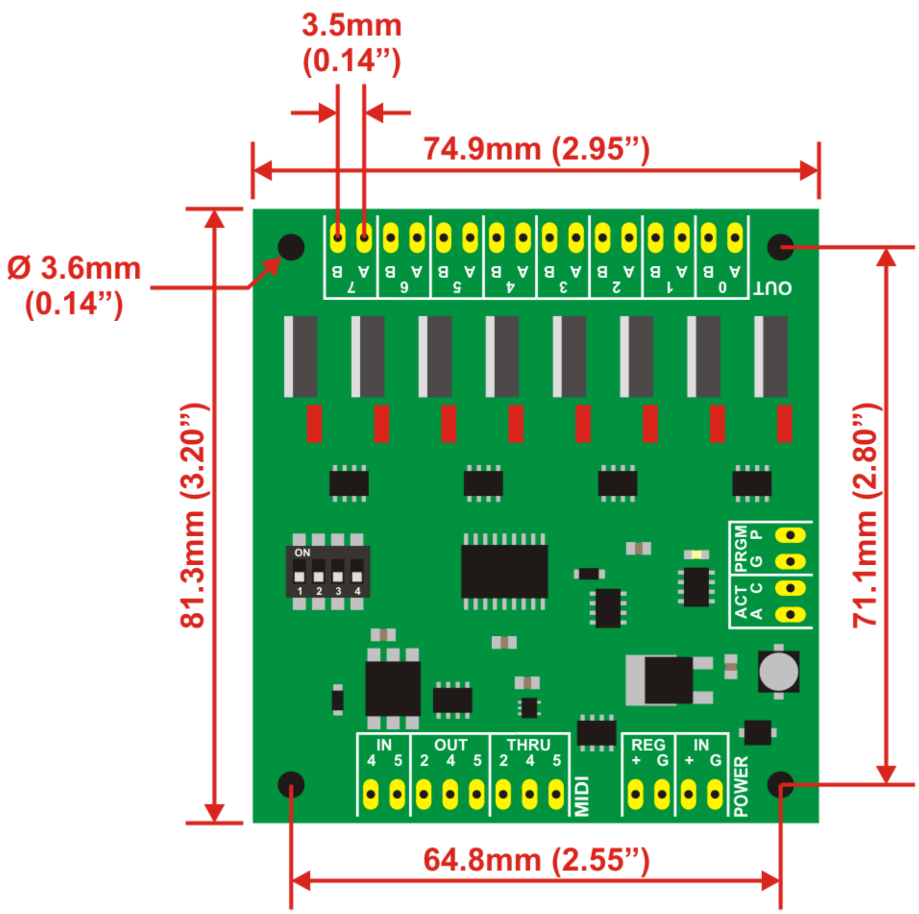
To prevent damage to the MSA-T and connected devices, and to prevent personal injury:

- Take reasonable static-control precautions when handling the MSA-T. This product includes ESD-sensitive parts.
- Use an appropriate power source.
- Do not exceed the electrical specifications of the MSA-T transistor outputs.

2.0 Feature Diagram



3.0 Mechanical Drawing



4.0 Power Supply

To operate, the MSA-T must be connected to a battery or other DC power supply. A “wall adapter” supply with appropriate specifications may be used.

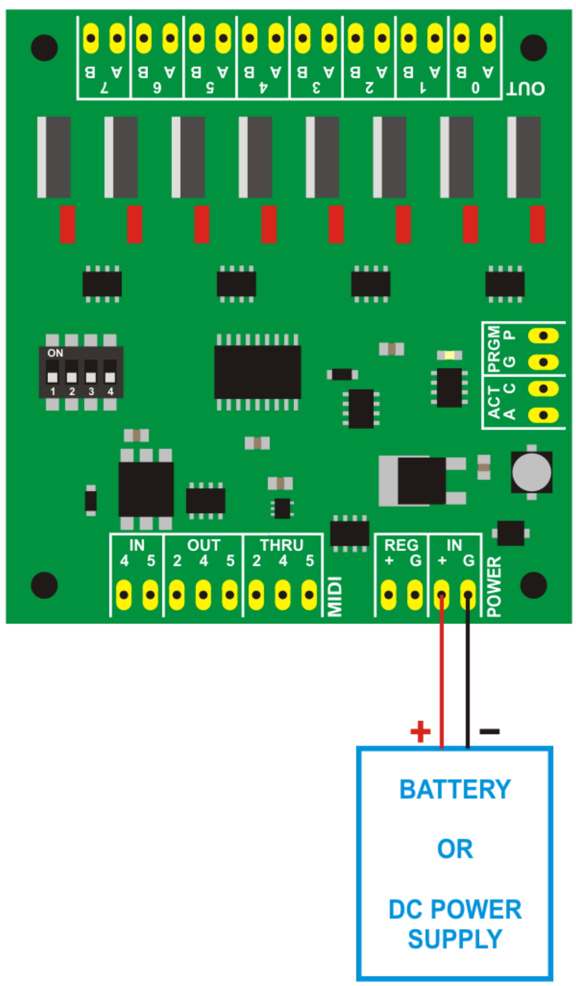
Power supply requirements:

- Output voltage: 9VDC
- Current capacity (**no load on Regulated 5V Output**): 200mA or greater
- Current capacity (**loaded Regulated 5V Output**): Varies with 5V load current

Wire the battery or power supply to the MSA-T “**POWER IN**” terminals as shown in **Figure 4.1**.

The Regulated 5V Output (“**POWER REG**” terminals) can supply up 100mA of output current. Do not attach a power supply to the “**POWER REG**” terminals of the MSA-T.

Figure 4.1: Power Supply Wiring



5.0 MIDI Wiring

The MSA-T features MIDI IN, OUT and THRU ports. Wire MIDI receptacles as shown in **Figure 5.1**. Pin 2 is wired only at the OUT or THRU side of the MIDI link. Pins 1 & 3 are unused.

Use the MIDI IN and MIDI THRU ports as shown in **Figure 5.2**.

If chaining multiple MSA units, MIDI connectors can be eliminated. See **Figure 5.3**.

The MIDI OUT port can be used to retrieve the MSA-T configuration via MIDI SysEx message. See *MSA Firmware User Manual*.

Figure 5.1: MIDI Receptacle Wiring

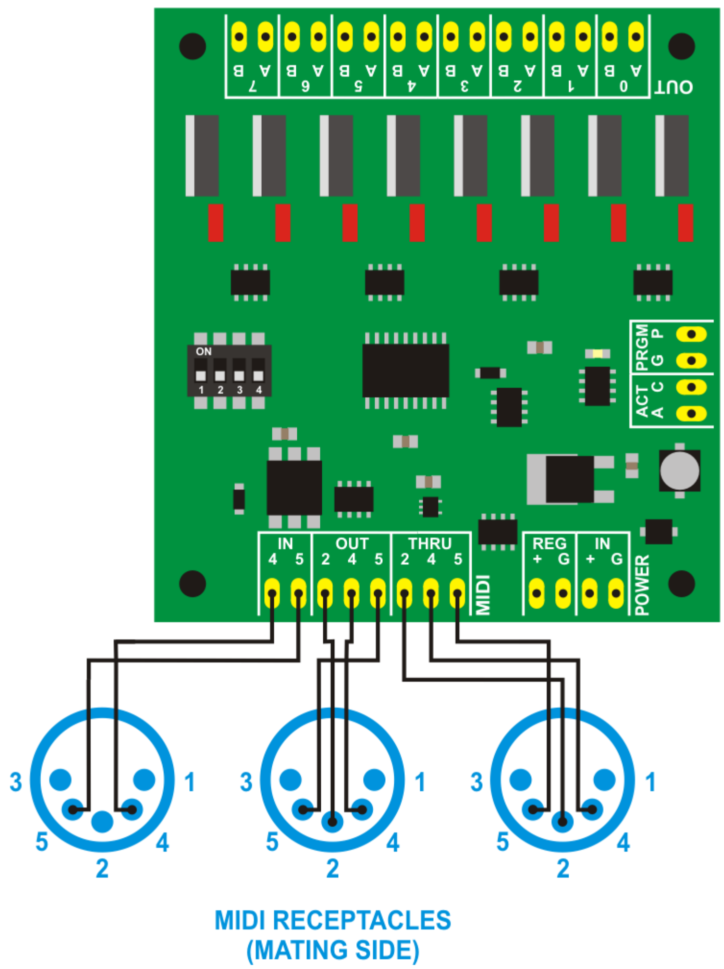


Figure 5.2: MIDI IN/THRU

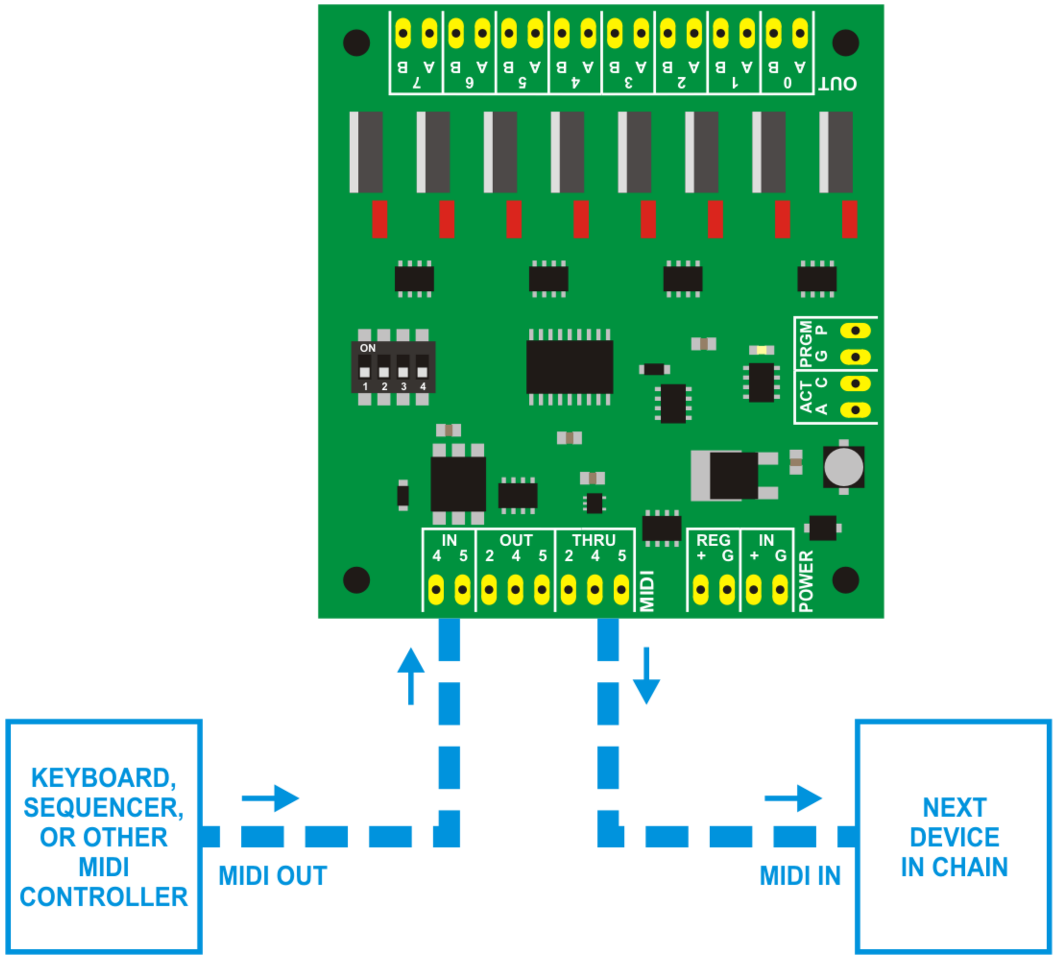
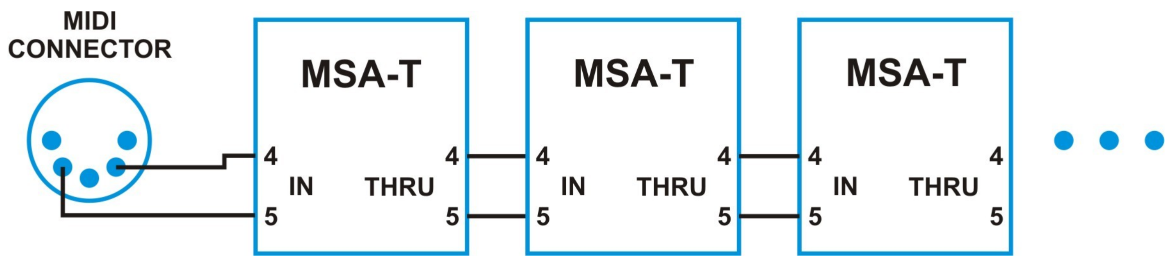


Figure 5.3: Multiple-Device Chain

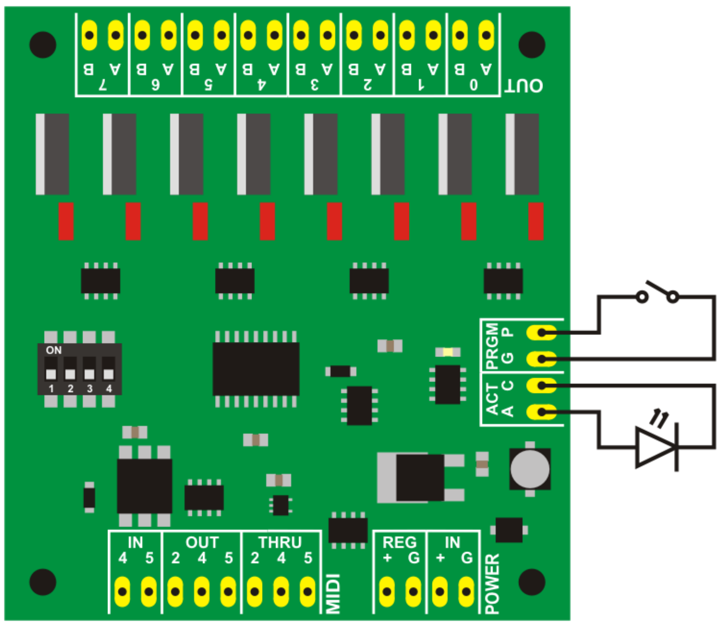


6.0 Program Switch and Remote Activity LED

A user-supplied "program" switch and remote activity LED can be attached as shown in **Figure 6.1**.

The program switch activates "learn mode" and other programming features of the MSA-T. Use a normally-open momentary switch. See *MSA Firmware User Manual* for additional details.

Figure 6.1: Program Switch and Remote Activity LED Wiring



7.0 Outputs

7.1 Electrical Specifications

- Maximum Switching Voltage: 24VDC (Not compatible with AC loads)
- Maximum Sink Current (steady state): 500mA
- Maximum Sink Current (with heat sinking and/or reduced duty cycle): 2.0A

7.2 Equivalent Schematic

Each MSA-T output is a TIP122 NPN Darlington transistor which can be used to switch a DC load. See **Figure 7.1** and **Figure 7.2**. The protection diode can be omitted for non-inductive loads.

Figure 7.1: Output Equivalent Schematic

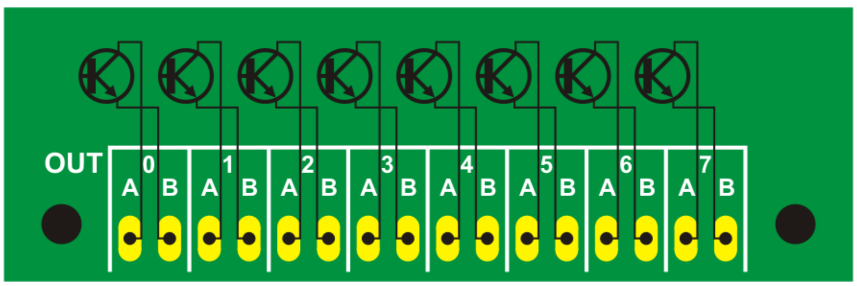
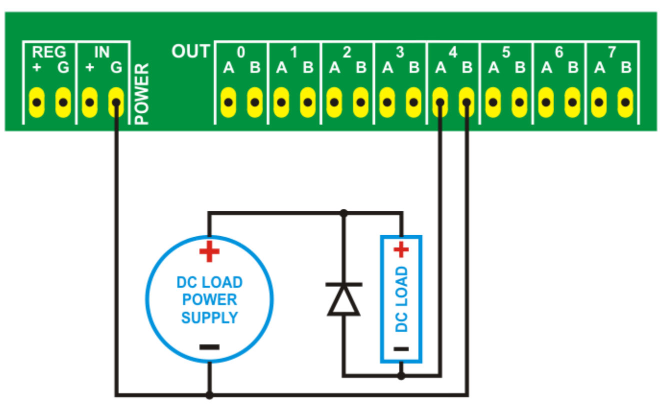


Figure 7.2: Output Wiring



8.0 Component Lead Identification & Mounting

If mounting transistors and output indicator LEDs, place components as shown below.

